NAC's GROUND VEHICLE OCCUPANT PROTECTION GUIDE

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The National Automotive Center (NAC) at the U.S. Army Tank-automotive and Armaments Command's Tank Automotive Research, Development and Engineering Center (TACOM-TARDEC), Warren, MI, has developed a software tool that provides much of the information needed to design occupant safety into vehicles. The *Occupant Crash Protection Development Guide for Ground Vehicles* is a multimedia tool that can educate beginners in the many facets of occupant protection or assist technical experts in developing new systems.

The Army's ground vehicle fleet needs the best possible occupant crash protection to prevent injuries to our soldiers. This requires upfront knowledge and planning prior to development. Determining the causes of injuries, developing system requirements, and extensive test and evaluation are essential to the initial phase of an occupant protection program. Engineers and managers must have access to information resources on occupant crash protection systems. Engineering and biomechanic topics that must be considered and used include mechanism of impact injuries; injury thresholds; existing and emerging crash protection technology; principles of occupant crash protection; lessons learned from previously developed systems; existing applicable standards; and test, simulation, and analysis methods.

The *Occupant Crash Protection Development Guide for Ground Vehicles* consolidates and organizes this resource information into an interactive, Web-compatible CD-ROM. The task-oriented organization of the CD, coupled with the multimedia format, maximizes comprehension of occupant crash protection concepts for diverse audiences. Additionally, the guide's use of visual aids effectively conveys the information. Internet compatibility allows the guide to be updated and provides users direct access to other Internet resources through integrated hyperlinks. Further, the electronic guide can be navigated through the use of hyperlinks, find features, and bookmarks.

The occupant crash protection guide provides essential vehicle occupant safety information for Army program managers, acquisition managers, developers of operational requirements, system safety engineers, project engineers, and others who are responsible for preparing the detailed occupant protection specifications for wheeled ground vehicles.

The guide runs on Microsoft Windows 95, NT 4.0, or more current operating systems. It uses the client's Internet browser to display text, charts, and video and audio files to assist them in understanding issues related to ground vehicle occupant protection.

The guide contains safety information from several major sources including the Federal Motor Vehicle Safety Standards, the Society of Automotive Engineers, the U.S. Army Safety Standards, and the U.S. Army Crash Survival Design Guide.

To accommodate the needs of individual users, the guide presents the principles of occupant crash protection in three levels of increasing intensity. The Overview is an executive summary; the Tutorial discusses the significant elements in the development process; and the Handbook provides detailed information about the design, development, test, and evaluation of occupant protection systems. The Handbook further explains the principles of occupant crash protection, human injury tolerance, crash test methodology, data analysis, and crash protection technology.

Another key feature of the guide is the Toolbox, which contains several analytical tools to assist users with analysis of test data and injury assessment. The Toolbox is comprised of software to calculate potential for spinal and head injury, to calculate and plot a crash pulse, and to calculate major body dimensions; a knowledge base to understand human tolerance to acceleration; and hyperlinks to government and commercial Web sites.

The final section of the guide is Resources. This section contains hyperlinks to Web sites of various government and industry offices that are involved in occupant crash safety including Army, Navy, and Air Force safety centers; the Insurance Institute for Highway Safety; the Human Factors and Ergonomics Society; and the Society of Automotive Engineers.

The best way for the Army to meet its goal of reducing the number of crash related fatalities 50 percent by 2010 is by improving in-cab occupant crash protection, installing crash avoidance systems, and improving driver education programs. The *Occupant Crash Protection Development Guide for Ground Vehicles* provides the information and tools needed to assist management in making choices that will achieve the optimal occupant crash protection for ground vehicles. Use of this interactive computer-based guide can lead to enhanced protection of our soldiers and provide increased potential for success of their missions.

Note: To order the Occupant Crash Protection Development Guide for Ground Vehicles, send an e-mail with your business address, phone number, and the number of CDs required to ***nac@tacom.army.mil****.*

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